

Claims:

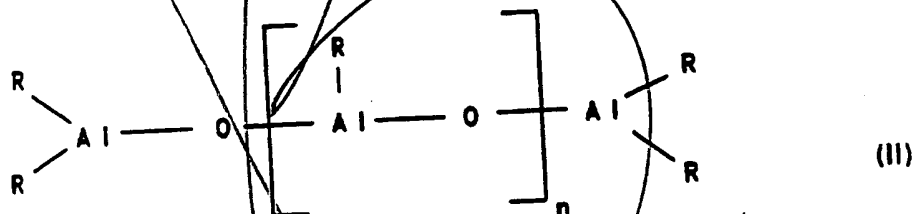
1. A polyolefin molding composition which has a broad, bimodal or multimodal melting range in the DSC spectrum, where the melting range maximum is between 120 and 165°C, the half-intensity width of the melting peak is broader than 10°C and the width determined at quarter peak height is greater than 15°C.
2. <sup>The</sup> A polyolefin molding composition as claimed in claim 1, wherein the half-intensity width of the crystallization peak is greater than 4°C and the width of the crystallization peak determined at quarter peak height is greater than 6°C.
3. A polyolefin molding composition as claimed in claim 1, which additionally contains nucleating agents, stabilizers, antioxidants, UV absorbers, light stabilizers, metal deactivators, free-radical scavengers, fillers and reinforcing agents, compatibilizers, plasticizers, lubricants, emulsifiers, pigments, optical brighteners, flameproofing agents, antistatics or blowing agents.
4. A process for the preparation of a polyolefin molding composition as claimed in claim 1, by mixing at least two polyolefins of different melting points, where the melting points of at least two of the polyolefins must differ by at least 5°C, the viscosity indices are greater than  $VI = 10 \text{ cm}^3/\text{g}$  and the molecular weights  $M_w$  are greater than 5000 g/mol.
5. A process for the preparation of a polyolefin molding composition as claimed in claim 1, by direct polymerization or copolymerization of at least two polyolefins of different melting point, where the melting points must differ by at

120, 105

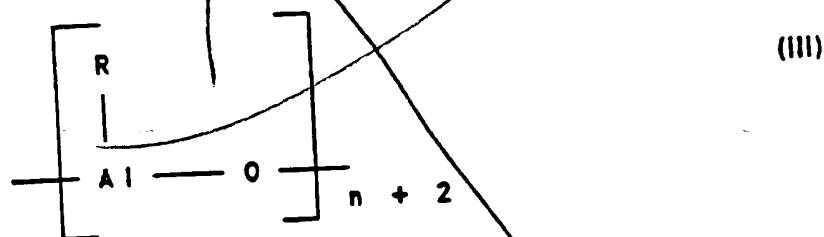
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least 5°C.

5 The process as claimed in claim <sup>12</sup> 5, wherein the  
olefins have the formula  $R^aCH=CHR^b$ , in which  $R^a$  and  
10  $R^b$  are identical or different and are a hydrogen  
atom or an alkyl radical having 1 to 14 carbon  
atoms, or  $R^a$  and  $R^b$ , together with the atoms connect-  
ing them, can form a ring, and are polymerized at a  
temperature of from -60 to 200°C, and a pressure of  
from 0.5 to 100 bar, in solution, in suspension or  
in the gas phase, in the presence of a catalyst,  
where the catalyst comprises at least two  
transition-metal components (metallocenes) and an  
aluminoxane of the formula II



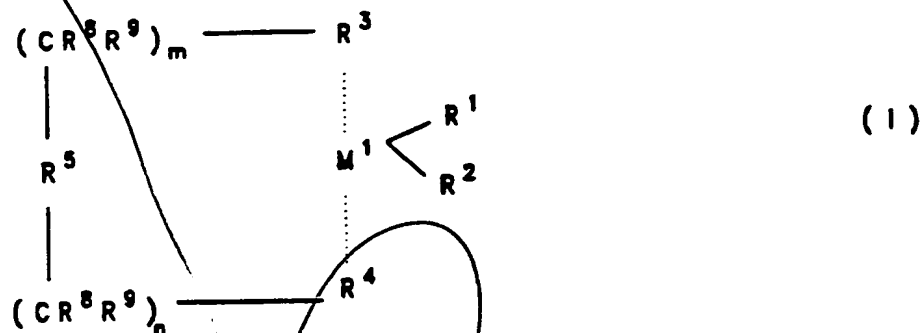
for the linear type and/or of the formula III



15 for the cyclic type, where, in the formulae II and  
III, the radicals R may be identical or different  
and are a  $C_1$ - $C_6$ -alkyl group, a  $C_1$ - $C_6$ -fluoroalkyl  
group, a  $C_6$ - $C_{18}$ -aryl group, a  $C_6$ - $C_{18}$ -fluoroaryl group  
or hydrogen, and n is an integer from 0 to 50, and  
20 the aluminoxane component may additionally contain  
a compound of the formula  $AlR_3$ ,

where the transition-metal component used comprises

~~at least two metallocenes of the formula I:~~



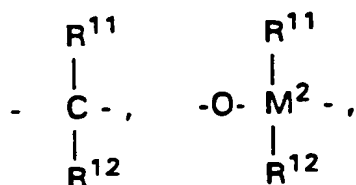
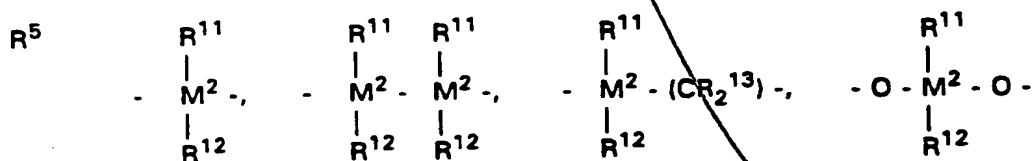
in which

$\text{M}^1$  is Zr, Hf or Ti,

$\text{R}^1$  and  $\text{R}^2$  are identical or different and are a hydrogen atom, a  $\text{C}_1$ - $\text{C}_{10}$ -alkyl group, a  $\text{C}_1$ - $\text{C}_{10}$ -alkoxy group, a  $\text{C}_6$ - $\text{C}_{10}$ -aryl group, a  $\text{C}_6$ - $\text{C}_{10}$ -aryloxy group, a  $\text{C}_2$ - $\text{C}_{10}$ -alkenyl group, a  $\text{C}_7$ - $\text{C}_{40}$ -arylalkyl group, a  $\text{C}_7$ - $\text{C}_{40}$ -alkylaryl group, a  $\text{C}_8$ - $\text{C}_{40}$ -arylalkenyl group or a halogen atom,

$\text{R}^3$  and  $\text{R}^4$  are identical or different and are a monocyclic or polycyclic, unsubstituted or substituted hydrocarbon radical which, together with the metal atom  $\text{M}^1$ , can form a sandwich structure,

$\text{R}^5$  is



~~$-\text{BR}^{11}$ ,  $=\text{AlR}^{11}$ ,  $-\text{Ge}-$ ,  $-\text{Sn}-$ ,  $-\text{O}-$ ,  $-\text{S}-$ ,  $=\text{SO}$ ,  $=\text{SO}_2$ ,  $=\text{NR}^{11}$ ,  $=\text{CO}$ ,~~

$=PR^{11}$  or  $=P(O)R^{11}$ ,

where

$R^{11}$ ,  $R^{12}$  and  $R^{13}$  are identical or different and are a hydrogen atom, a halogen atom, a  $C_1$ - $C_{10}$ -alkyl group, a  $C_1$ - $C_{10}$ -fluoroalkyl group, a  $C_6$ - $C_{10}$ -aryl group, a  $C_6$ - $C_{10}$ -fluoroaryl group, a  $C_1$ - $C_{10}$ -alkoxy group, a  $C_2$ - $C_{10}$ -alkenyl group, a  $C_7$ - $C_{40}$ -arylalkyl group, a  $C_8$ - $C_{40}$ -arylalkenyl group or a  $C_7$ - $C_{40}$ -alkylaryl group, or  $R^{11}$  and  $R^{12}$  or  $R^{11}$  and  $R^{13}$ , in each case together with the atoms connecting them, form a ring, and

$M^2$  is silicon, germanium or tin,

$R^8$  and  $R^9$  are identical or different and are as defined for  $R^{11}$ ,

$m$  and  $n$  are identical or different and are zero, 1 or 2, where  $m$  plus  $n$  is zero, 1 or 2.

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7. The process as claimed in claim 12, wherein

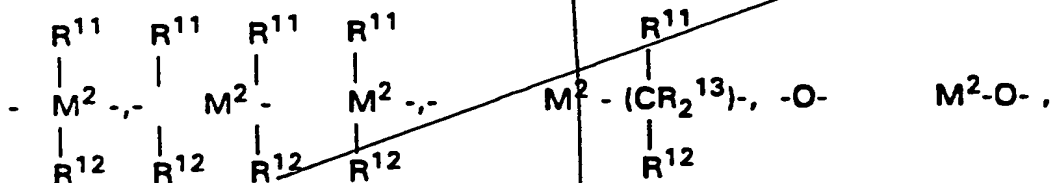
$M^1$  is Zr or Hf,

$R^1$  and  $R^2$  are identical or different and are a hydrogen atom, a  $C_1$ - $C_3$ -alkyl group, a  $C_1$ - $C_3$ -alkoxy group, a  $C_6$ - $C_8$ -aryl group, a  $C_6$ - $C_8$ -aryloxy group, a  $C_2$ - $C_4$ -alkenyl group, a  $C_7$ - $C_{10}$ -arylalkyl group, a  $C_7$ - $C_{12}$ -alkylaryl group, a  $C_8$ - $C_{12}$ -arylalkenyl group or chlorine,

$R^3$  and  $R^4$  are identical or different, monocyclic or polycyclic, unsubstituted or substituted hydrocarbon radicals which, together with the metal atom  $M^1$ , can form a sandwich structure,

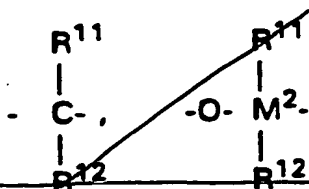
~~$R^5$  is~~

$R^5$



sub  
A2

Sub  
A2  
Cont'd



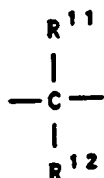
=BR<sup>11</sup>, =AlR<sup>11</sup>, -Ge-, -Sn-, -O-, -S-, =SO-, =SO<sub>2</sub>, =NR<sup>11</sup>, =CO, =PR<sup>11</sup> or =P(O)R<sup>11</sup>, where R<sup>11</sup>, R<sup>12</sup> and R<sup>13</sup> are identical or different and are a hydrogen atom, a halogen atom, a C<sub>1</sub>-C<sub>4</sub>-alkyl group, CF<sub>3</sub> group, a C<sub>6</sub>-C<sub>8</sub>-aryl group, a pentafluorophenyl group, a C<sub>1</sub>-C<sub>4</sub>-alkoxy group, a C<sub>2</sub>-C<sub>4</sub>-alkenyl group, a C<sub>7</sub>-C<sub>10</sub>-arylalkyl group, a C<sub>8</sub>-C<sub>12</sub>-arylalkenyl group or a C<sub>7</sub>-C<sub>12</sub>-alkyl-aryl group, or R<sup>11</sup> and R<sup>12</sup> or R<sup>11</sup> and R<sup>13</sup>, in each case together with the atoms connecting them, form a ring,

M<sup>2</sup> is silicon or germanium,

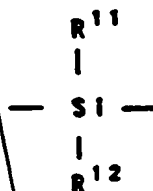
R<sup>8</sup> and R<sup>9</sup> are identical or different and are as defined for R<sup>11</sup>,

m and n are identical or different and are zero or 1, where m plus n are zero or 1.

8. The process as claimed in claim 1<sup>12</sup>, wherein M<sup>1</sup> is zirconium or hafnium, R<sup>1</sup> and R<sup>2</sup> are identical and are methyl or chlorine, R<sup>4</sup> and R<sup>3</sup> are indenyl, cyclopentadienyl or fluorenyl, where these ligands may carry additional substituents as defined for R<sup>11</sup>, R<sup>12</sup> and R<sup>13</sup>, where the substituents may be different and, with the atoms connecting them, may also form rings, R<sup>5</sup> is a



or



radical, and n plus m are zero or 1.

9. The method of using a molding composition as claimed in

claim. 1 ~~for the production of~~  
moldings.

10. A molding which can be produced from a molding  
composition as claimed in claim 1.

5

add  
A4  
B2

add  
C1

ADD  
E3

add  
H4